

Cunningham Lane Bridge
Cunningham Lane over Pine River
Rockbridge Township
Richland County
Wisconsin

HAER No. WI-51

HAER
WIS,
52-ROBR,
1-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
National Park Service
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Department of the Interior
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Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

CUNNINGHAM LANE BRIDGE

HAER No. WI-51

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Location: Spanning the Pine River, .2 miles east of
State Highway 80 in the town of Rockbridge,
Richland County, Wisconsin.

UTM: 15.713390.4813000
Quad: Rockbridge

Date of Construction: 1895

Bridge Manufacturer: The Chicago Bridge and Iron Company

Present Owner: The Town of Rockbridge

Present Use: Vehicular and Pedestrian Traffic

Significance: The Cunningham Lane Bridge, a Pratt full-
slope pony truss, is one of the earliest
remaining Pratt trusses in Wisconsin. Built
by the Chicago Bridge and Iron Company, a
significant regional bridge fabricator, the
small truss is indicative of the period's
bridge designs and construction ideology.

Historian: Edwin G. Cordes
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5366-02-00, Cunningham Lane Bridge, Richland
County. Federal Highway Administration
Project BRZ 5299(22).

The Cunningham Lane bridge, a small Pratt full-slope pony truss maintains access to two small farms south-east of the town of Rockbridge in Richland County, Wisconsin. The bridge spans the Pine River approximately .2 miles east of State Highway 80. The truss bridge is located in an area rich with glacier geology and sandstone formations. Designed and fabricated by the Chicago Bridge and Iron Company, and erected on the site in 1895, the Cunningham Lane Bridge is one of Wisconsin's oldest remaining examples of a Pratt design bridge. Records list 317 existing Pratt trusses while only 69 are full slope Pratt pony truss bridges and only two of the pony trusses are older than the Cunningham Lane span.¹

The small, three panel pony truss has an overall length of 41 feet 3 inches, a width of 12 feet 11 inches, and a deck height of 6 feet, 3 inches. Two small bridge plates which identified the fabricator as "Chicago Bridge Company - 1895" were mounted on the batter braces and have since been removed. The deck is composed of commercially sawn lumber of uneven lengths and supported by 5 large wooden joists. The wooden joists are in turn supported by iron I-beam lateral struts which are connected to the bottom chord members and hipped verticals. Lower lateral rods give the bridge deck further diagonal stability.

The bridge rests on simple expansion bearings which are mounted to recently constructed cylindrical concrete footings encased in steel forms. Wood retaining walls help retard erosion from the pier areas.

All major truss connections are of pin design. The batter braces and top chords are of a common design, with two channels connected by a cover plate on the top side and lattice work on the underside. The bottom chord is composed of dual eye bars, which may be wrought iron.²

The verticals and diagonals show unusual details. The verticals are composed of two offset, opposing angle irons joined at intervals with riveted plates. This design provides for increased section while facilitating ease of fabrication and erection. The member itself would be easy to layout, punch, and rivet in the shop, while the open spaces between the angles would facilitate connection of the lateral knee braces in the field. The double row of rivets reduces the section somewhat but also reduces the shear stress on each rivet.

The diagonals have looped welded connections at the top and bottom chords. Towards the bottom chord end of each diagonal is an open turnbuckle, which is connected to threaded ends of the diagonal. The threaded ends are round and upset. An unusual feature of these diagonals is their bottom and top chord connections which are of a forged double loop construction. The double loop connection forms a slot into which the hipped verticals fit. The complex termination allows the diagonal tension members to remain centered at the pin joints.

These details appear to be a standard feature of the Chicago Bridge and Iron Company's designs during this period. The Bills Street Bridge in the town of Augusta, Eau Claire County, Wisconsin is a 102 foot long Pratt through truss also designed by the Chicago Bridge Company in 1894.³ The Augusta bridge also contains the unique split looped eye bar connections and dual riveted angle irons are used to create the hipped vertical members. It is quite possible that these unique engineering aspects served as a trademark of the Chicago Bridge and Iron Company's design.

The Pratt truss bridge design was patented by Thomas and Caleb Pratt in 1844.⁴ The design is characterized by diagonal members acting in tension and vertical members in compression. This design allowed for reduced length in the compression members, not only saving materials but also adding to the strength of the structure. After the diagonal members were reduced to one per panel, the configuration began to gain acceptance as an alternative to the complex and costly Whipple, Bollman and Fink systems.⁵ When an all iron version of the Pratt truss was introduced in the 1870's, the design's use became widespread. The durability, versatility and economy of structure quickly caused it to become the single most common of all truss designs, rivaled only by the Warren configuration.⁶

Although originally constructed of both timber and cast iron, the Pratt truss was easily adapted to all wrought iron and later steel construction.⁷ The simplicity of the bridge design allowed for standardization and adaptability for many different sizes and

uses. Many later truss designs employed the basic Pratt configuration with minor changes. An example would be the Parker truss which is actually a Pratt with a polygonal top chord. The simplistic design allowed for prefabricated pieces and site construction by unskilled workers.

The Chicago Bridge and Iron Company was one in a number of regional Midwest bridge fabricating firms founded shortly before the turn of the century. The company was incorporated in July of 1889 by Horton, Wheelock and King in Chicago.⁸ Horace E. Horton who originally was a bridge contractor in Rochester Minnesota proved to be the central figure in the business venture. Business directories list the company as active from 1891-1909.⁹ Horton appears in the Rochester directories under bridge contractors from 1886-1891.¹⁰ Horace Horton eventually became sole owner of the large bridge fabricating company.

The board of supervisors of Richland County established the town of Rockbridge in June of 1850 from land included in the township of Richmond.¹¹ The town was established to benefit numerous residents, drawn to the area by the mature timber stands and abundant rivers for milling. The first settler to Rockbridge, Samuel Swinehart in 1844, established the mill that would later serve as the central point of the town.¹² As the oak and maple growths were deforested, immigrants began to utilize the land for farming. The 1900 U.S. census lists the population of Richland County at 19,121 and the town of Rockbridge at 991, making

it the fifth largest town in the county.¹³ Settlers were primarily of northern European descent and came from areas such as Rockford Ill., Waukesha Wi., and Washington County, Wi.. Judge James H. Miner's Richland County History lists two people, Budington Kinyon and Alden Haseltine as probable early settlers near the present bridge site.¹⁴

No direct reference to the construction of the Cunningham Lane Bridge can be found in the 1894 or 1895 proceedings of the Richland County Board of Supervisors, although I.M. Janney, the Rockbridge representative, headed the Committee on Roads and Bridges and was authorized to construct or make repairs to bridges as needed by the chairman D.L. Noble at those sessions.¹⁵

The Cunningham Lane Bridge is significant in its representation of a common bridge design of the period. It is an example of a design adaptable to many lengths and sites and is an indication of the growing movement towards standardization, economy and utility in early highway construction. The span's age and the interesting design features found in Chicago Bridge and Iron Company structures give it added significance.

Endnotes

- 1 Barbara Wyatt, Proj. Dir. Cultural Resource Management in Wisconsin, Vol. 2. A Manual for Historic Properties, (Madison: Historic Preservation Division, State Historical Society of Wisconsin, 1986) p.12-6.
- 2 By 1895, the rolled compression members of almost all truss bridges were probably steel. The tension members such as eye bars, may have been wrought iron. See Robert S. Newbery, Truss Bridges, Vol. 4., Historic Highway Bridges of Wisconsin, (Madison: Wisconsin Department of Transportation, 1988).
- 3 George M. Danko, A Selective Survey of Truss Bridges, (Madison: The State Historical Society of Wisconsin, Historic Preservation Division, 1977) p.39.
- 4 T. Allan Comp, "Bridge Truss Types: A Guide to, Identifying and Dating". Technical Leaflet 95. (Nashville, TN.: American Association for State and Local History, 1977).
- 5 David Plowden, Bridges: The Spans of North America (New York: Viking Press, 1974) pp. 64-65.
- 6 "Truss Types".
- 7 Bridges. p. 65.
- 8 Eli W. Imberman, "The Formative Years of the Chicago Bridge and Iron Company". Vols. 1 and 2, Ph.D dissertation (The University of Chicago, 1973) p. 264.
- 9 Selective Survey. p. 51.
- 10 Ibid. Horace E. Horton may be related to Charles M. Horton, the founder of a bridge building company under his name during this period in La Crosse, WI. See report HAER No. WI-22, McGilvary Road Bridges No. 1-4,6. Diane Kromm, Summer 1987.
- 11 James H. Miner, The History of Richland County Wisconsin. (Madison: Western Historical Association, 1906) p. 279.
- 12 Ibid. p. 280.
- 13 Ibid. p. 190.
- 14 Ibid. p. 283.
- 15 Proceedings of The Board of Supervisors, Richland County Wisconsin, Annual Session, Nov. - Dec. 1894, 1895 (Viola WI.: The Intelligencer Print, 1895).

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- Comp, T. Allan. "Bridge Truss Types: A Guide to, Identifying and Dating". Technical Leaflet 95, Nashville, TN.: American Association for State and Local History, 1977.
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The Cunningham Lane Bridge - Rockbridge Wisconsin 1893 The Chicago Bridge Company

